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Lavatory cleansing block.

A lavatory rim cleansing block comprising: 30 to 80 % by weight of an anionic surfactant; 0 to 50 % by weight of an inert or electrolyte filler; 5 to 50 % by weight of a water-soluble bleaching agent; 5 to 15 % by weight of a hydrophobic structurant, preferably an oily liquid perfume. The weight ratio between the anionic surfactant and the filler, if electrolytic, is preferably greater than 2 and the preferred water-soluble bleaching agent is potassium dichloro cyanurate.

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The present invention is concerned with lavatory cleansing blocks and a process for making them. More in particular, it relates to cleansing blocks which are intended for use as a cleansing, sanitizing and deodorizing block contained in a device which is hung below the rim of toilet bowls. The block is thereby activated by the flush water and effects its cleaning and sanitizing action each time the bowl is flushed with flush water from the cistern. These so-called lavatory rim blocks are not in constant contact with water, as distinct from the so-called in-cistern type of cleansing blocks which are constantly immersed in the flush water cistern of lavatory bowls. It will be evident that such blocks will have completely different requirements as to structure, rate of wear, cracking, mushing and swelling properties, foam properties and perfume generation.

Such lavatory rim blocks are known in the art. For instance, the European patent application 167,210 discloses an extruded lavatory rim block which is free from para-dichloro benzene, comprising 40 to 90 % by weight of an anionic surfactant, 5 to 55 % by weight of an inert or electrolyte filler, and 5 to 15 % by weight of an oily liquid perfume, the weight ratio between the anionic surfactant and the filler, if electrolytic, being greater than 2.

Whereas such blocks have good cleansing properties, they have a very limited sanitizing effect on the microorganisms which are always present in the toilet bowl.

EP-A-341836 (JEYES) discloses an extruded lavatory cleansing block with a good sanitising and cleansing effect, which block comprises an anionic surfactant and a chlorinated cyanuric acid derivative. However, this block also comprises a third essential component being a source of specified metal ions, such as barium chloride, cadmium sulphate and calcium chloride, which component may be environmentally less acceptable. Furthermore, this block is especially designed to be used in the cistern of a lavatory.

It is an object of the present invention to provide a lavatory rim block which possesses a good cleansing, sanitizing and perfume generating activity. Moreover, the blocks must be stable for a prolonged period under the humid conditions of a toilet bowl.

It has now been found that these and other objects may be achieved by means of the lavatory rim blocks according to the invention, which comprise: 30 to 80 % by weight of an anionic surfactant; 0 to 50 % by weight of an inert or electrolyte filler; 5 to 50 % by weight of a water-soluble bleaching agent; 5 to 15 % by weight of a hydrophobic structurant. The weight ratio between the anionic surfactant and the filler, if electrolytic, is thereby preferably greater than 2.

Surprisingly, the stability of the water-soluble bleaching agent inside the lavatory block proved to be very good, while at the same time the delivery of bleaching agent to the flush water was more than satisfactory and constant over a prolonged period.

Examples of water-soluble bleaching agents used in accordance with the invention are persulphates such as potassium monopersulphate and active chlorine bleaching agents such as alkali metal salts of dichloro cyanuric acid. The preferred water-soluble bleaching agent is potassium dichlorocyanurate. The bleaching agent is preferably present in an amount of 10 to 25 % by weight.

The blocks comprise 5-15 % by weight of a hydrophobic structurant. This is preferably a liquid oily perfume, of the kind described in the European patent application 167,210. It will be understood that the liquid oily perfume must be stable in the presence of the water-soluble bleaching agent. Suitable oily perfumes can be easily selected by testing them in combination with the water-soluble bleaching agent. Examples of suitable bleach-stable perfumes are Verdeo 898, Bonanza 048 and Ponderosa 431 all ex IFF, and LB 132 ex Quest.

However, the perfume may be partially or totally replaced by another hydrophobic structurant, for example fatty acids or fatty alcohols, typically having 12 to 16 carbon atoms.

The anionic surfactants which may be used in the present invention include for example alkali metal salts of alkyl substituted benzene sulphonates, alkali metal long chain alkyl sulphates, alkali metal ether sulphates derived from long chain alcohols and alkyl phenols, alkali metal alkane sulphonates, alkali metal olefin sulphonates and alkali metal sulposuccinates, whereby the sodium salts are generally preferred. Most favoured are sodium alkyl benzene sulphonates.

Desirably, the anionic surfactant used in the block should have a relatively low perfume solubility and should only absorb water to optimize the ratio of oily liquid and lamellar phases to solid and inverted hexagonal phases.

Preferred anionic surfactants are sodium C₉-C₁₄ alkyl benzene sulphonates, sodium C₁₁-C₂₀ olefin sulphonates, sodium C₁₁-C₂₀ alkane sulphonates and sodium long chain C₁₀-C₁₄ alkyl sulphates or mixtures thereof, sodium alkyl benzene sulphonates being particularly preferred as the main surfactant component.

In addition, other types of surfactants, such as nonionic surfactants such as the ethoxylated fatty alcohol nonionics, fatty acid alkanolamides and amine oxides, may be incorporated as desired. However, they

should not be present in amounts exceeding 20 % by weight, preferably 10 % by weight, because they could easily adversely affect the foaming properties and the rate of wear of the blocks.

The filler used in the lavatory rim blocks of the present invention can be an electrolyte, such as sodium sulphate, sodium carbonate and a phosphorous containing sodium salt, e.g. sodium triphosphate, hex-
 5 ametaphosphate, pyrophosphate, and orthophosphate. The filler may also be an inert material such as calcite, clay or urea.

It was found that a high electrolyte content tends to suppress the solubility of the block to such an extent that there is insufficient active present in the bowl after flushing to generate a stable foam. Hence, if an electrolyte is used as the filler, it is desirable to have a high ratio of surfactant to filler levels in the block,
 10 i.e. a high proportion of surfactant and a low proportion of electrolyte. It was found that the anionic surfactant/electrolyte filler weight ratio should be greater than about 2 in order to avoid excessive swelling in use and to provide adequate foam generation and stability. If an inert filler is used, the ratio of surfactant to filler proved to be not critical.

The blocks according to the invention can be made by mixing the ingredients to form a dough of
 15 suitable consistency which can then be extruded and cut into lengths to form blocks having the desired properties.

The extrusion process can be suitably carried out using simple conventional extrusion equipment such as normally used for manufacturing soap bars.

The lavatory rim blocks formed in accordance with the invention may also comprise non-surfactant
 20 nonionic polymeric materials such as polyethylene glycols, and minor ingredients such as dyes, germicides, fungicides and opacifiers, whereby the compatibility of such ingredients with the water-soluble bleaching agent must be observed.

The invention will now be illustrated by means of the following non-limiting examples.

25 EXAMPLES 1-3

Lavatory rim blocks were prepared from the ingredients listed in the following Table, wherein the amounts are given as % by weight. The ingredients were mixed to form a dough which was subsequently
 30 extruded in a conventional soap-extrusion apparatus and finally cut into lengths of approximately 8 cm. The obtained blocks had a weight of about 50 g.

TABLE

Example	<u>1</u>	<u>2</u>	<u>3</u>
35 Nansa^R HS 30 1)	60	60	60
Calcite	13.5	11	8.5
Sodium sulphate	13.5	11	8.5
40 KDCCA	5	10	15
Verdeo IFF 898 2)	--	--	8
C₁₂ fatty alcohol	8	8	--

- 45 **1) Nansa HS 85 is sodium C₉-C₁₃ alkyl benzene sulphonate having a mean molecular weight 235, ex Marchon Company (contains 10-15 % N₂SO₄ as impurity).**
- 50 **2) Verdeo IFF 898 is a perfume obtainable from IFF.**

The stability of the bleaching agent in the rim blocks was tested by placing them in a conventional rim block cage inside a lavatory bowl and flushing the toilet according to a standard pattern, whereafter the
 55 concentration of bleaching agent in the flush water was determined as well as the concentration of remaining bleaching agent in the block. It was found that the bleaching agent remained stable inside the blocks for some weeks, and that they continued to deliver KDCCA to the flush water for at least three weeks.

Claims

1. A lavatory rim cleansing block comprising:
 30 to 80 % by weight of an anionic surfactant;
 0 to 50 % by weight of an inert or electrolyte filler;
 5 to 50 % by weight of a water-soluble bleaching agent;
 5 to 15 % by weight of a hydrophobic structurant.
2. A lavatory cleansing block according to Claim 1, wherein the hydrophobic structurant is a liquid oily perfume.
3. A lavatory cleansing block according to any one of the preceding Claims wherein the weight ratio between the anionic surfactant and the filler, if electrolytic, is greater than 2.
4. A lavatory cleansing block according to any one of the preceding Claims comprising 10 to 25 % by weight of the water-soluble bleaching agent.
5. A lavatory cleansing block according to any one of the preceding Claims wherein the water-soluble bleaching agent is an active chlorine bleaching agent.
6. A lavatory cleansing block according to any one of the preceding Claims wherein the water-soluble bleaching agent is an alkali metal salt of dichloro cyanuric acid, preferably potassium dichloro cyanurate.
7. A lavatory cleansing block according to any one of the preceding Claims comprising 50 to 80 % by weight of an anionic surfactant.
8. A lavatory cleansing block according to any one of the preceding Claims wherein the anionic surfactant comprises C₉-C₁₄ alkylbenzene sulphonate.
9. A lavatory cleansing block according to any one of the preceding Claims further comprising a nonionic surfactant in an amount of less than 10 % by weight.
10. A lavatory cleansing block according to any one of the preceding Claims comprising 10 to 45 % by weight of an inert or electrolyte filler.
11. A lavatory cleansing block according to any one of the preceding Claims comprising 7 to 12 % by weight of the oily liquid perfume.
12. Process for preparing a lavatory block according to any one of the preceding Claims, whereby the ingredients are mixed to form a dough, which is then extruded and cut into blocks of suitable lengths.



European
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EUROPEAN SEARCH REPORT

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EP 91 20 1409

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A,D	EP-A-0 167 210 (UNILEVER NV) * whole document * ---	1-12	C 11 D 17/00 C 11 D 3/395 C 11 D 3/00 A 61 L 9/01
A,D	EP-A-0 341 836 (JEYES LTD) * page 3, lines 5-22; abstract * ---	1,4-8	
A	EP-A-0 101 402 (HENKEL) * claims; pages 4,5; examples * ---	1-5,8, 10-12	
A	EP-A-0 014 979 (HENKEL) * claims; page 3, lines 8-12,20,29-32 * -----	1-5,7-12	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			C 11 D A 61 L
The present search report has been drawn up for all claims			
Place of search		Date of completion of search	Examiner
Berlin		18 September 91	PELLI-WABLAT B
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